



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2021-0102; Project Identifier AD-2020-01270-E]

RIN 2120-AA64

Airworthiness Directives; General Electric Company Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for certain General Electric Company (GE) GEnx-2B67, GEnx-2B67/P, and GEnx-2B67B model turbofan engines. This proposed AD was prompted by a report of a crack in the lower fuel manifold causing fuel leakage. This proposed AD would require an ultrasonic inspection (USI) or a fluorescent penetrant inspection (FPI) of the lower fuel manifold. Depending on the results of the USI or FPI, this proposed AD would require replacement of the lower fuel manifold with a part eligible for installation. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: (202) 493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact General Electric Company, 1 Neumann Way, Cincinnati, OH 45215; phone: (513) 552-3272; email: aviation.fleetsupport@ae.ge.com; website: www.ge.com. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759.

Examining the AD Docket

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0102; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Mehdi Lamnyi, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7743; fax: (781) 238-7199; email: Mehdi.Lamnyi@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2021-0102; Project Identifier AD-2020-01270-E” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to <https://www.regulations.gov>, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Mehdi Lamnyi, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

The FAA received a report that a GENx-2B model turbofan engine installed on a Boeing Model 747-8 airplane was removed from service due to confirmed fuel leakage from a lower fuel manifold in May 2019. The operator observed fuel leakage during a routine borescope inspection of the high-pressure turbine, and later confirmed by ultrasonic inspection a crack at brazed block #4 in the pilot secondary fuel circuit tube on the lower fuel manifold. The FAA received two similar reports, in March 2020 and May 2020, of a fuel leak from the lower fuel manifold at brazed block #4. The manufacturer has identified the root cause of this cracking as low-cycle fatigue due to the abrupt transition created by the brazed support block pad and its inability to slide due to thermal loads as intended. This condition, if not addressed, could result in failure of the fuel manifold, engine fire, and damage to the airplane.

FAA’s Determination

The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

Related Service Information under 1 CFR Part 51

The FAA reviewed GE GENx-2B Service Bulletin (SB) 73-0089 R01, dated January 11, 2021. The service information specifies procedures for performing an initial on-wing visual inspection, a USI, or an FPI of the top main fuel manifold and the lower fuel manifold. The service information also specifies procedures for performing repetitive in-shop visual inspection and FPI for GENx-2B model turbofan engines. The service information also provides instructions for replacing the top main fuel manifold and lower fuel manifold if a crack is found that exceeds the manufacturer's criteria or if a leak is detected during inspection. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

Proposed AD Requirements in this NPRM

This proposed AD would require performing either a USI, an on-wing spot FPI, or an in-shop FPI of the lower fuel manifold, part number (P/N) 2619M58G01, at the locations adjacent to the five support block pads to detect cracks. Depending on the results of the inspection, this AD may require removing the lower fuel manifold from service and replacing it with a part eligible for installation.

Differences Between this Proposed AD and the Service Information

GE GENx-2B SB 73-0089 R01, dated January 11, 2021, describes procedures for performing an initial on-wing visual inspection of the top main fuel manifold and the lower fuel manifold, followed by a USI or an FPI. This service information describes procedures for a repetitive in-shop visual inspection and FPI of the top main fuel manifold and the lower fuel manifold. This service information also provides instructions for replacing the top main fuel manifold or the lower fuel manifold if a crack is discovered that exceeds the criteria established by the manufacturer or if a leak is detected during inspection.

This proposed AD would not require inspection or replacement of the top main fuel manifold or a visual inspection of the lower fuel manifold. This proposed AD would also not require the repetitive in-shop visual inspection and FPI of the top main fuel manifold and the lower fuel manifold. This proposed AD would require a USI, an on-

wing spot FPI, or an in-shop FPI of the lower fuel manifold and, depending on the results of the inspection, replacement of the lower fuel manifold with a part eligible for installation. Reports received by the FAA indicate that fuel leakage has occurred on the lower fuel manifold. Based on these reports, the FAA is not requiring inspection of the top main fuel manifold.

Interim Action

The FAA considers this proposed AD would be an interim action. The design approval holder is currently developing a modification to address the unsafe condition identified in this AD. Once this modification is developed, the FAA might consider additional rulemaking.

Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 156 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
FPI or USI of the lower fuel manifold	16 work-hours x \$85 per hour = \$1,360	\$0	\$1,360	\$212,160

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the proposed inspection. The FAA has no way of determining the number of aircraft that might need this replacement:

On-condition costs

Action	Labor Cost	Parts Cost	Cost per product
Replace the lower fuel manifold	2 work-hours x \$85 per hour = \$170	\$47,730	\$47,900

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected operators.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Would not affect intrastate aviation in Alaska, and
- (3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

General Electric Company: Docket No. FAA-2021-0102; Project Identifier AD-2020-01270-E.

(a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

(b) Affected ADs

None.

(c) Applicability

This AD applies to General Electric Company (GE) GEnx-2B67, GEnx-2B67/P, and GEnx-2B67B model turbofan engines with lower fuel manifold, part number (P/N) 2619M58G01, installed.

(d) Subject

Joint Aircraft System Component (JASC) Code 7310, Engine Fuel Distribution.

(e) Unsafe Condition

This AD was prompted by a report of a crack in the lower fuel manifold. The FAA is issuing this AD to detect cracking of the lower fuel manifold. The unsafe condition, if not addressed, could result in failure of the fuel manifold, engine fire, and damage to the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

(1) Within the compliance time specified in Table 1 to paragraph (g)(1) of this AD, perform either an ultrasonic inspection (USI), an on-wing spot fluorescent penetrant inspection (FPI), or an in-shop FPI of the lower fuel manifold, P/N 2619M58G01, in accordance with paragraph (g)(1)(i), (ii), or (iii) of this AD, as applicable.

Table 1 to Paragraph (g)(1) – Compliance time

Lower fuel manifold cycles since new (CSN)	Compliance time
Less than 1,700 CSN	After the lower fuel manifold has accumulated 1,700 CSN, but before it exceeds 2,200 CSN
1,700 CSN or more	Within 500 engine flight cycles (FCs) after the effective date of this AD

(i) Perform a USI of the lower fuel manifold at the locations adjacent to the five support block pads to detect cracks in accordance with paragraph 4. APPENDIX – A of GENx-2B Service Bulletin (SB) 73-0089 R01, dated January 11, 2021.

(ii) Perform an on-wing spot FPI of the lower fuel manifold at the five brazed block joints to detect cracks. Guidance on performing the spot FPI can be found in paragraph 3.B.(6)(a) of GENx-2B SB 73-0089 R01, dated January 11, 2021.

(iii) Perform an in-shop FPI of the lower fuel manifold at the five brazed block joints to detect cracks. Guidance on performing the FPI can be found in paragraph 3.C.(4) of GENx-2B SB 73-0089 R01, dated January 11, 2021.

(2) If a crack or rejectable indication is found during the USI, on-wing spot FPI, or in-shop FPI required by paragraphs (g)(1)(i), (ii), and (iii) of this AD, before further flight, remove the lower fuel manifold from service and replace it with a part eligible for installation.

(h) Definition

For the purpose of this AD, a part eligible for installation is:

(1) Any serviceable lower fuel manifold, P/N 2619M58G01, with less than 1,700 CSN, or

(2) Any lower fuel manifold, P/N 2619M58G01, with 1,700 CSN or more that has been inspected in accordance with paragraph (g)(1)(i), (ii), or (iii) of this AD and a crack or rejectable indication was not found, or

(3) Any approved lower fuel manifold with a part number other than P/N 2619M58G01.

(i) No Reporting Requirements

The reporting requirements specified in paragraph 4. APPENDIX – A of GE GENx-2B SB 73-0089 R01, dated January 11, 2021, are not required by this AD.

(j) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in Related Information. You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(k) Related Information

(1) For more information about this AD, contact Mehdi Lamnyi, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7743; fax: (781) 238-7199; email: Mehdi.Lamnyi@faa.gov.

(2) For service information identified in this AD, contact General Electric Company, 1 Neumann Way, Cincinnati, OH 45215; phone: (513) 552-3272; email: aviation.fleetsupport@ae.ge.com; website: www.ge.com. You may view this referenced service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759.

Issued on February 18, 2021.

Gaetano A. Sciortino, Deputy Director for Strategic Initiatives,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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